

## CLAIMS

What is claimed is:

1. A method for routing data packets in a network, comprising grouping routing-table entries into numbered clusters for lookup of a routing-table entry based on cluster number and destination address.

2. A method as recited in claim 1, further comprising assigning a cluster number to a data packet.

3. A method as recited in claim 2, further comprising routing said data packet based on a routing-table entry selected from a group of routing-table entries based on said cluster number and a destination address associated with said data packet.

4. A method as recited in claim 3, further comprising replacing said cluster number of said data packet with a new cluster number when said packet is routed.

5. A method as recited in claim 2, further comprising matching the cluster number associated with said data packet to a corresponding cluster number associated with said routing-table entries.

6. A method as recited in claim 5, further comprising searching routing-table entries associated with said cluster number using a destination address associated with

said data packet as an index.

7. A method as recited in claim 6, further comprising routing said data packet using a routing-table entry corresponding to said destination address.

5

8. A method as recited in claim 7, further comprising replacing said cluster number of said data packet with a new cluster number when said packet is routed.

9. A method as recited in claim 1, further comprising assigning a Cluster Number (Incoming) and a Cluster Number (Outgoing) to each routing table entry.

10. A method as recited in claim 9, further comprising assigning a Cluster Number (Incoming) to said data packet.

11. A method as recited in claim 10, further comprising routing said data packet based on a routing-table entry selected from a group of routing-table entries corresponding based on said Cluster Number (Incoming) and a destination address associated with said data packet.

12. A method as recited in claim 11, further comprising replacing said Cluster Number (Incoming) of said data packet with the Cluster Number (Outgoing) associated with said selected routing-table entry when said data packet is routed.

13. A method as recited in claim 9, further comprising matching the Cluster Number (Incoming) associated with said data packet to a corresponding Cluster Number (Incoming) associated with said routing-table entries.

5

14. A method as recited in claim 13, further comprising searching routing-table entries associated with said Cluster Number (Incoming) using a destination address associated with said data packet as an index.

10 15. A method as recited in claim 14, further comprising routing said data packet using a routing-table entry corresponding to said destination address.

15 16. A method as recited in claim 15, further comprising replacing said Cluster Number (Incoming) of said data packet with the Cluster Number (Outgoing) associated with said corresponding routing-table entry when said data packet is routed.

17. A method for routing data packets in a network, comprising:  
grouping routing-table entries into numbered clusters for lookup of a routing-table entry based on cluster number and destination address; and

20 routing a data packet based on a routing-table entry selected from a group of routing-table entries based on a cluster number and a destination address associated with said data packet.

18. A method as recited in claim 17, further comprising replacing said cluster number of said data packet with a new cluster number when said packet is routed.

19. A method as recited in claim 17, further comprising matching the cluster number associated with said data packet to a corresponding cluster number associated with said routing-table entries.

20. A method as recited in claim 19, further comprising searching routing-table entries associated with said cluster number using a destination address associated with said data packet as an index.

21. A method as recited in claim 20, further comprising routing said data packet using a routing-table entry corresponding to said destination address.

22. A method as recited in claim 21, further comprising replacing said cluster number of said data packet with a new cluster number when said packet is routed.

23. A method as recited in claim 17, further comprising assigning a Cluster Number (Incoming) and a Cluster Number (Outgoing) to each routing table entry.

24. A method as recited in claim 23, further comprising assigning a Cluster Number (Incoming) to said data packet.

25. A method as recited in claim 24, further comprising routing said data packet based on a routing-table entry selected from a group of routing-table entries corresponding based on said Cluster Number (Incoming) and a destination address  
5 associated with said data packet.

26. A method as recited in claim 25, further comprising replacing said Cluster Number (Incoming) of said data packet with the Cluster Number (Outgoing) associated with said selected routing-table entry when said data packet is routed.

27. A method as recited in claim 23, further comprising matching the Cluster Number (Incoming) associated with said data packet to a corresponding Cluster Number (Incoming) associated with said routing-table entries.

28. A method as recited in claim 27, further comprising searching routing-table entries associated with said Cluster Number (Incoming) using a destination address associated with said data packet as an index.

29. A method as recited in claim 28, further comprising routing said data  
20 packet using a routing-table entry corresponding to said destination address.

30. A method as recited in claim 29, further comprising replacing said Cluster Number (Incoming) of said data packet with the Cluster Number (Outgoing) associated with said corresponding routing-table entry when said data packet is routed.

5 31. A method for routing data packets in a network, comprising:  
grouping routing-table entries into numbered clusters for lookup of a routing-table entry based on cluster number and destination address;  
matching a cluster number associated with a data packet to a corresponding cluster number associated with said routing-table entries; and  
10 routing said data packet based on a routing-table entry selected from a group of routing-table entries based on the cluster number and the destination address associated with said data packet.

15 32. A method as recited in claim 31, further comprising replacing said cluster number of said data packet with a new cluster number when said packet is routed.

33. A method as recited in claim 31, further comprising searching routing-table entries associated with said cluster number using a destination address associated with said data packet as an index.

34. A method for routing data packets in a network, comprising:

grouping routing-table entries into clusters;

assigning a Cluster Number (Incoming) and a Cluster Number (Outgoing) to each routing table entry;

5 assigning a Cluster Number (Incoming) to a data packet;

matching the Cluster Number (Incoming) associated with said data packet to a corresponding Cluster Number (Incoming) associated with said routing-table entries;

10 searching routing-table entries associated with said Cluster Number (Incoming) of said data packet using a destination address associated with said data packet as an index; and

routing said data packet based on a routing-table entry corresponding to the destination address associated with said data packet.

15 35. A method as recited in claim 34, further comprising replacing said Cluster Number (Incoming) of said data packet with the Cluster Number (Outgoing) associated with said selected routing-table entry when said data packet is routed.

36. A method for routing data packets in a network, comprising:

grouping routing-table entries into clusters;

20 assigning a Cluster Number (Incoming) and a Cluster Number (Outgoing) to each routing table entry;

assigning a Cluster Number (Incoming) to a data packet;

matching the Cluster Number (Incoming) associated with said data packet to a  
corresponding Cluster Number (Incoming) associated with said routing-table entries;  
searching routing-table entries associated with said Cluster Number (Incoming)  
of said data packet using a destination address associated with said data packet as an  
5 index;  
routing said data packet based on a routing-table entry corresponding to the  
destination address associated with said data packet; and  
replacing said Cluster Number (Incoming) of said data packet with the Cluster  
Number (Outgoing) associated with said selected routing-table entry when said data  
10 packet is routed.